

This listing of claims will replace all prior versions,  
and listings, of claims in the application:

Claims 1-4 (canceled)

1 Claim 5 (original): In a switch having  $N_{in}$  input ports  
2 applied to  $K_{in}$  input shared blocks, a central switching  
3 fabric, and  $N_{out}$  output ports provided from  $K_{out}$  output  
4 shared blocks, a method for scheduling packets queued at  
5 the input shared blocks for application to the output  
6 ports, the method comprising steps of:

- 7 a) for each of the input shared blocks, providing a  
8 request token associated with one of the output shared  
9 blocks, each of the request tokens including an  
10 indication based on a number of requested links for  
11 the output shared block with which it is associated;
- 12 b) for each of the input shared blocks, providing a  
13 release token associated with one of the output shared  
14 blocks, each of the release tokens including an  
15 indication based on a number of released links for the  
16 output shared block with which it is associated;
- 17 c) for each of one or more reservation time slots  
18 within a cell time slot,
  - 19 i) accepting, by an input shared block, a  
20 request token from another input shared block,
  - 21 ii) determining whether a virtual output queue  
22 of the input shared block associated with the  
23 output shared block with which the request token  
24 is associated, is heavily occupied,
  - 25 iii) if it is determined that the virtual output  
26 queue of the input shared block associated with

27 the output shared block with which the request  
28 token is associated is heavily occupied, then  
29 A) requesting at least one extra link to  
30 the output shared block associated with the  
31 accepted request token,  
32 iv) determining whether the virtual output queue  
33 of the input shared block associated with the  
34 output shared block with which the request token  
35 is associated, is lightly occupied,  
36 v) if it is determined that the virtual output  
37 queue of the input shared block associated with  
38 the output shared block with which the request  
39 token is associated is lightly occupied, then  
40 A) releasing at least one link to the  
41 output shared block associated with the  
42 accepted request token if it is indicated  
43 that a number of requested links for the  
44 output shared block is greater than zero,  
45 vi) if it is determined that the virtual output  
46 queue of the input shared block associated with  
47 the output shared block with which the request  
48 token is associated is not lightly occupied, then  
49 A) releasing at least one link to the  
50 output shared block associated with the  
51 accepted request token if the input shared  
52 block reserved more than a predetermined  
53 number of links and if it is indicated that  
54 a number of requested links for the output  
55 shared block is greater than zero,  
56 vii) accepting, by the input shared block, a  
57 release token from another input shared block;

58           viii) determining whether or not the input  
59           shared block can take a link to the output shared  
60           block associated with the release token,  
61           ix) if it is determined that the input shared  
62           block can take a link to the output shared block  
63           associated with the release token, then taking a  
64           link from the release token.

1   Claim 6 (original): The method of claim 5 wherein the step  
2   of determining whether a virtual output queue of the input  
3   shared block associated with the output shared block with  
4   which the request token is associated, is heavily occupied,  
5   is based on a comparison with a threshold value.

1   Claim 7 (original): The method of claim 5 wherein the step  
2   of requesting an extra link to the output shared block  
3   associated with the accepted request token, is effected by  
4   setting a request indicator corresponding to the input  
5   shared block and the output shared block, and incrementing  
6   the indication based on the number of links to the output  
7   shared block requested.

1   Claim 8 (original): The method of claim 5 wherein the step  
2   of determining whether the virtual output queue of the  
3   input shared block associated with the output shared block  
4   with which the request token is associated, is lightly  
5   occupied, is based on a comparison with a threshold value.

1   Claim 9 (original): The method of claim 5 wherein the step  
2   of releasing a link to the output shared block associated  
3   with the accepted request token is effected by decreasing

4 the indication based on the number of links to the output  
5 shared block released.

1 Claim 10 (original): The method of claim 5 wherein the  
2 step of determining whether or not the input shared block  
3 can take a link to the output shared block associated with  
4 the release token, is based on a number of all reserved  
5 links by the input shared block and an indication of  
6 whether or not the input shared block had requested a link  
7 to the output shared block.

1 Claim 11 (original): The method of claim 5 further  
2 comprising a step of:  
3 d) delivering, by each of the input shared blocks,  
4 cells to the central switch fabric based on current  
5 indications of a number of link reservations to each  
6 of the output shared blocks, at the end of a cell time  
7 slot.

1 Claim 12 (original): In a switch having  $N_{in}$  input ports  
2 applied to  $K_{in}$  input shared blocks, a central switching  
3 fabric, and  $N_{out}$  output ports provided from  $K_{out}$  output  
4 shared blocks, a method for scheduling packets queued at  
5 the input shared blocks for application to the output  
6 ports, the method comprising steps of:  
7 a) for each of the input shared blocks, providing a  
8 request token associated with one of the output shared  
9 blocks, each of the request tokens including an  
10 indication based on a number of requested links for  
11 the output shared block with which it is associated;  
12 b) for each of the input shared blocks, providing a  
13 release token associated with one of the output shared

14 blocks, each of the release tokens including an  
15 indication based on a number of released links for the  
16 output shared block with which it is associated;  
17 c) for each of one or more reservation time slots  
18 within a cell time slot,  
19 i) accepting, by an input shared block, a  
20 request token from an another input shared block,  
21 ii) determining whether a virtual output queue  
22 of the input shared block associated with the  
23 output shared block with which the request token  
24 is associated, is heavily occupied,  
25 iii) if it is determined that the virtual output  
26 queue of the input shared block associated with  
27 the output shared block with which the request  
28 token is associated is heavily occupied, then  
29 A) requesting at least one extra link to  
30 the output shared block associated with the  
31 accepted request token,  
32 iv) determining whether the virtual output queue  
33 of the input shared block associated with the  
34 output shared block with which the request token  
35 is associated, is lightly occupied,  
36 v) if it is determined that the virtual output  
37 queue of the input shared block associated with  
38 the output shared block with which the request  
39 token is associated is lightly occupied, then  
40 A) releasing at least one link to the  
41 output shared block associated with the  
42 accepted request token if it is indicated  
43 that a number of requested links for the  
44 output shared block is greater than zero,

45 vi) if it is determined that the virtual output  
46 queue of the input shared block associated with  
47 the output shared block with which the request  
48 token is associated is not lightly occupied, then  
49 A) releasing at least one link to the  
50 output shared block associated with the  
51 accepted request token if the input shared  
52 block reserved more than a predetermined  
53 number of links,  
54 vii) accepting, by the input shared block, a  
55 release token from another input shared block,  
56 viii) determining whether to release at least  
57 one link to the output shared block with which  
58 the accepted release token is associated based on  
59 a queue occupancy, a number of links reserved,  
60 and a predetermined number of links  
61 ix) if it has been determined to release a link  
62 to the output shared block with which the  
63 accepted release token is associated, releasing a  
64 link,  
65 x) determining whether or not to take at least  
66 one released link to the output shared block with  
67 which the accepted release token is associated  
68 based on queue occupancy, a number of links  
69 reserved, and a number of links between the input  
70 shared block and the central switch fabric, and  
71 xi) if it is determined to take at least one  
72 released link to the output shared block with  
73 which the accepted release token is associated,  
74 taking at least one link.

1 Claim 13 (original): The method of claim 12 wherein the  
2 step of determining whether a virtual output queue of the  
3 input shared block associated with the output shared block  
4 with which the request token is associated, is heavily  
5 occupied, is based on a comparison with a threshold value.

1 Claim 14 (original): The method of claim 12 wherein the  
2 step of requesting at least one extra link to the output  
3 shared block associated with the accepted request token, is  
4 effected by setting a request indicator corresponding to  
5 the input shared block and the output shared block, and  
6 incrementing the indication based on the number of links to  
7 the output shared block requested.

1 Claim 15 (original): The method of claim 12 wherein the  
2 step of determining whether the virtual output queue of the  
3 input shared block associated with the output shared block  
4 with which the request token is associated, is lightly  
5 occupied, is based on a comparison with a threshold value.

1 Claim 16 (original): The method of claim 12 wherein the  
2 step of releasing at least one link to the output shared  
3 block associated with the accepted request token is  
4 effected by decreasing the indication based on the number  
5 of links to the output shared block released.

1 Claim 17 (original): The method of claim 12 wherein the  
2 step of determining whether or not the input shared block  
3 can take at least one link to the output shared block  
4 associated with the release token, is based on a queue  
5 occupancy of a virtual output queue, and a number of all  
6 reserved links by the input shared block and an indication

7 of whether or not the input shared block had requested at  
8 least one link to the output shared block if it is  
9 indicated that a number of released links for the output  
10 shared block is greater than zero.

1 Claim 18 (original): The method of claim 12 further  
2 comprising a step of:

3 d) delivering, by each of the input shared blocks,  
4 cells to the central switch fabric base based on  
5 current indications of a number of link reservations  
6 to each of the output shared blocks, at the end of a  
7 cell time slot.

1 Claim 19 (original): A switch for switching packets  
2 arriving at a number of input ports to an appropriate one  
3 of a number of output ports, the switch comprising:

4 a) a central switching fabric;  
5 b) output shared blocks, each coupled with at least  
6 one output port;  
7 c) links between the central switch fabric and each  
8 of the output shared blocks  
9 d) input shared blocks, each  
10 i) coupled with at least one input port,  
11 ii) having virtual output queues, each of the  
12 virtual output queues corresponding to one or  
13 more output ports,  
14 iii) storing  
15 A) an indication of whether at least one  
16 links to each of the output shared blocks  
17 has been requested,



18                   B) an indication based on a number of links  
19                   to each of the output shared blocks  
20                   released, and  
21                   C) an indication based on a number of links  
22                   reserved to each of the output shared  
23                   blocks;  
24        e) request tokens, each associated with a particular  
25        one of the output shared blocks and each indicating a  
26        number of requests for links to the associated one of  
27        the output shared blocks;  
28        f) release tokens, each associated with a particular  
29        one of the output shared blocks and each indicating a  
30        number of released links to the associated one of the  
31        output shared blocks; and  
32        g) links between the central switch fabric and each  
33        of the input shared blocks.

1    Claim 20 (original): The switch of claim 19 wherein each  
2    of the input shared blocks holds at least one of the  
3    request tokens and at least one of the release tokens  
4    during a reservation time slot.